

FABRICATION OF A MAXILLARY SPLIT COMPLETE DENTURE FOR A POST-MENOPAUSAL EDENTULOUS PATIENT WITH XEROSTOMIA – A CASE REPORT

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ABSTRACT

Objective: To fabricate a split complete denture with saliva reservoir for a post-menopausal edentulous patient.

Background: Post-menopausal women with xerostomia complain of extreme discomfort in wearing dentures

Material and Method: A split maxillary complete denture with a saliva reservoir was made to decrease patient discomfort

Results: Patient comfort and function were greatly enhanced after the prosthesis was given

Conclusion: Split denture with saliva reservoir is a viable option to enhance patient comfort and quality of life.

Key Words: Split Denture, Artificial Saliva Reservoirs, Xerostomia, Menopause

1. INTRODUCTION

One of the common and annoying symptom women experience during menopause is xerostomia. Studies have reported reduced salivary flow in menopausal women.¹ the prevalence of dry mouth ranges from 14-46% in the adult population. It is more prevalent in females than males by 5-12% and the prevalence increases with age.² Xerostomia can lead to eating and swallowing difficulty, speech difficulties, halitosis, an increased count of dental caries, difficulty in denture wearing and oral thrush. There are often reports of mouth sores and painful oral mucosa due to which tolerance to denture wearing decreases.³ Various treatment options have been suggested for patients with xerostomia.⁴⁻⁶ However, prosthodontic management of edentulous xerostomia patients can be done by incorporating salivary reservoirs in the dentures.⁷⁻¹⁰ A split mandibular complete denture has been reported by Mendoza et al.¹¹ A modification of the same technique, wherein a split reservoir was incorporated in the maxillary denture was tried in the present case.

2. CASE REPORT

A 58 year old female patient reported to our department with a chief complaint of dryness of mouth and intolerance to denture wearing. History revealed that the patient was a complete denture wearer for the past 15 years. However, the discomfort in denture wearing started from the past one year. The patient also complained that her dentures frequently stuck to the mucosa and she has difficulty in speech and mastication. The patient revealed that she attained menopause eight years back and was under medication for asthma. On examination, the mucosa was dry and halitosis was noted.

3. TREATMENT PLAN

Due to the severity of dryness a combination of therapeutic and prosthodontic interventions was planned. She was also prescribed pilocarpine 5mg three times daily. The prosthetic treatment plan included conventional mandibular denture and a split maxillary complete denture with a reservoir for artificial salivary substitute.

4. PROCEDURE

1. Primary impressions were made with irreversible hydrocolloid (Tropicalgin, Zhermack clinical, Italy).
2. Secondary impressions were made using medium body addition silicone (3M ESPE, Express XT regular body, Germany).
3. The maxillary master cast was duplicated using irreversible hydrocolloid.
4. Maxillo-mandibular relations were recorded and the duplicated maxillary cast and the mandibular master cast were mounted in the conventional manner. The maxillary master cast was set aside for later use.
5. Teeth arrangement was done and care was taken so as to make space for the reservoir to be placed at a later stage.

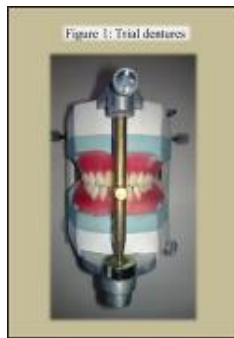


Figure 1: Trial dentures

6. Try-in was done.
7. A putty index was fabricated to replicate labial and buccal contours.



Figure 2: Putty index

8. The maxillary denture was planned to consist of two parts, a lower section acting as a base for the reservoir and an upper section with the teeth.
9. To determine the height at which the base section needs to be fabricated the anterior height of the maxillary trial dentures was measured. (x) Then, the height of the upper anterior teeth was measured, to which 3mm was added to allow for sufficient acrylic under the teeth. (y). This height was subtracted from the total anterior height to calculate the height of the base section (z). ($x - y = z$)

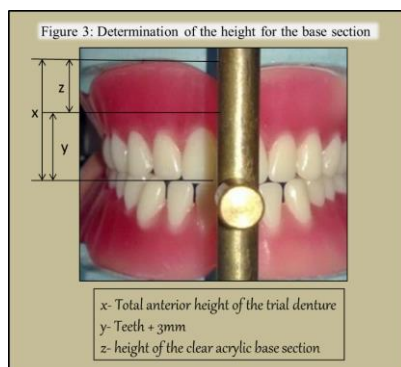


Figure 3: Height of base selection calculated

10. The lower base section of the maxillary denture(A) was fabricated on the master cast to the height determined

earlier. Three rectangular wax blocks, two posteriorly and one anteriorly, measuring 4x2 mm were built on the occlusal surface.



Figure 4: Lower base section of the maxillary denture with wax blocks –A

11. The waxed lower base section with wax projections (A) was invested and acrylised in clear heat polymerising acrylic resin. (Impact acrylic denture base, Dental exports of London, England).

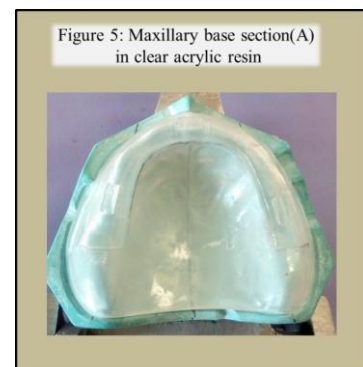


Figure 5: Maxillary base section (A) in clear acrylic resin

12. The acrylised lower base section (A) was cut back on the facial aspect (Figure 6), so that the labial fullness achieved during the try-in stage can be replicated in the teeth bearing segment.

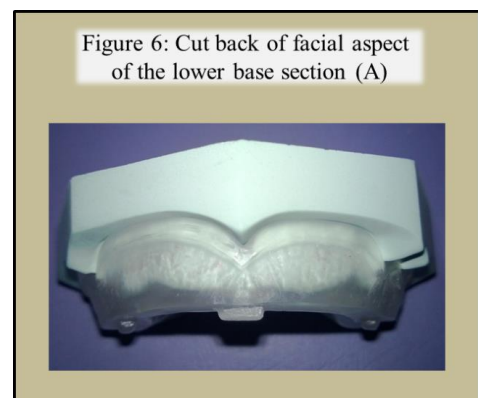


Figure 6: Cut back of facial aspect of the lower base section (A)

13. The clear acrylic base with the cut back was duplicated and poured in stone (A1). This cast was used for the fabrication of the upper section.

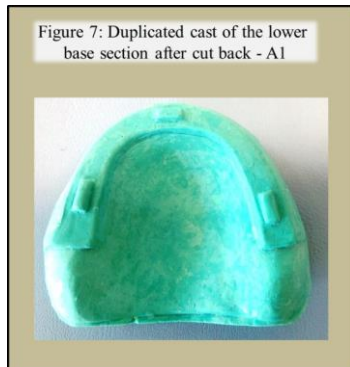


Figure 7: Duplicated cast of the lower base section after cut back - A1

14. The wax up and teeth arrangement of the second half was completed on the lower base section (A), on the articulator, using the putty index as a guide.

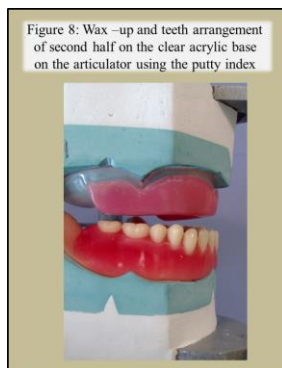


Figure 8: Wax-up and teeth arrangement of second half on the clear acrylic base on the articulator using putty index

15. The waxed up section was transferred onto the duplicated base model (A1) and acrylised using pink acrylic resin. (Impact acrylic denture base, Dental exports of London, England).

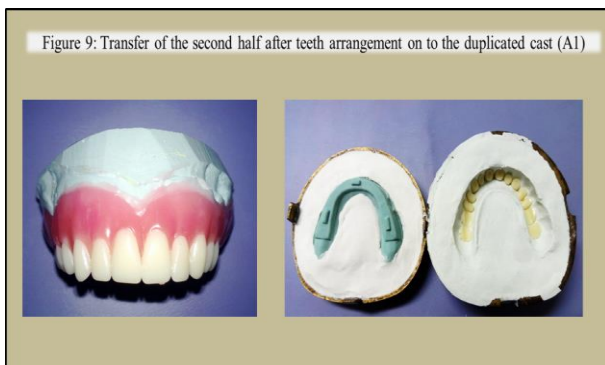


Figure 9: Transfer of the second half after teeth arrangement on to the duplicated cast (A1)

16. The two sections were joined together.

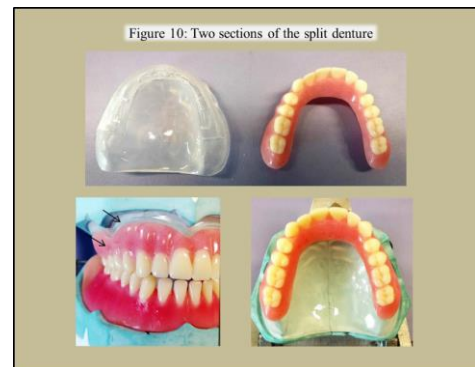


Figure 10: Two sections of the split denture

17. Once the fit was verified, reservoirs were cut into the clear acrylic lower base section. After the reservoirs were placed, 0.5mm diameter holes were made in the palatal aspect to allow for the drainage of the salivary substitute.

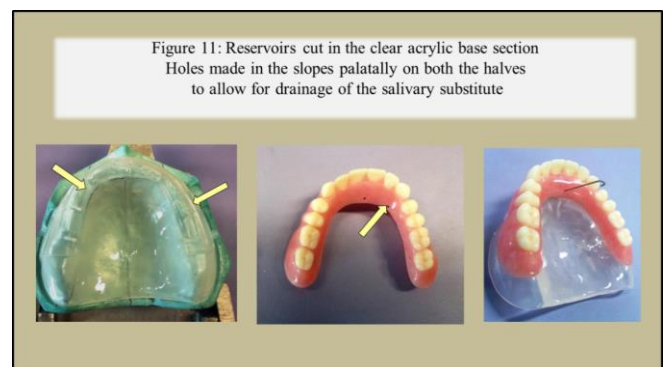


Figure 11: Reservoirs cut in the clear acrylic base section holes made in the slopes palatally on both the halves to allow for drainage of the salivary substitute

18. Drainage was tested by filling the reservoirs with water.
19. Artificial salivary substitute (BioteneR, Glaxo Smith Kline, US) was prescribed for the patient.
20. Patient was instructed to clean and maintain the patency of the drain holes using orthodontic wire.
21. Patient was recalled after 6 months for evaluation.

5. DISCUSSION

This split reservoir denture is an innovative method of treating elderly patients suffering from Xerostomia. On follow up after six months, patient reported reduction in halitosis and xerostomia however salivary substitute had to be refilled about 3 to 4 times a day for better comfort. The mechanical locking between the two parts of the denture was found to be satisfactory.

Mendoza ET al¹¹ suggested various advantages and limitations of the split denture technique:

Advantages:

1. Easy maintenance and ready access to the reservoirs, by both patient and professional.
2. The clear acrylic for the lower base section enables visualization of the level of salivary substitute.

Limitations:

1. Laboratory steps are time consuming and intricate
2. Cannot be used for cases with insufficient inter-occlusal distance.
3. Blocking of the drain holes due to food particles during mastication.
4. The acrylic between the two parts of the denture might wear off on continuous use.

6. CONCLUSION

The split denture technique has greatly enhanced patient comfort and reduced the symptoms of xerostomia. The patient has been wearing the denture comfortably for the last 6 months and reported reduction in halitosis and xerostomia.

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